

REMARKS

In response to the final Office Action dated April 30, 2008, Applicants have amended claims 1, 10 and 11. The limitations of claim 9, previously dependent upon claim 1, have been incorporated into claim 1, and claim 9 cancelled. Care has been taken to avoid the introduction of new matter. Claims 3, 4, 8, 10-18, 23, 24, and 27-52 are withdrawn. In view of the foregoing amendments and the following remarks, Applicants respectfully submit that all pending claims are in condition for allowance.

Entry of Amendment under 37 C.F.R. § 1.116

The Applicants request entry of this Rule 116 Response. The limitations of claim 9, previously dependent upon claim 1, have been incorporated into claim 1, and claim 9 cancelled. Claims 10 and 11 have been amended to depend directly from claim 1. There are no new issues presented. As will be explained below, the claim amendments place the application in condition for allowance. Moreover, the Manual of Patent Examining Procedure sets forth in Section 714.12 that “any amendment that would place the case either in condition for allowance or in better form for appeal may be entered.” Entry of these claim amendments is respectfully requested.

Claim Rejections Under 35 U.S.C. § 103

Claims 1, 2, 5-7, 19-21, 25, and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Housh et al., ASM Metals Handbook, vol. 2, 10th ed., AZ80A alloy (hereinafter Housh).

Applicants traverse.

The Office Action asserts that Housh discloses the features including a Mg-based tube, composition, tensile properties, and elongations. Relying on case law, the Examiner concludes that one of ordinary skill in the art would clearly be motivated to make those claimed compounds in searching for new products in the expectation that compounds similar in structure will have similar properties.

Firstly, the Applicants are unaware of any legal tenet extending the doctrine of close structural similarity of chemical compounds to a magnesium base alloy pipe. The PTO is respectfully requested to cite any relevant judicial precedent which would justify assuming into existence facts which do not exist in a pipe, merely because it has been held that compounds exhibiting very close structural similarity, *e.g.*, difference of a single methyl group, may be presumed to exhibit similar properties. See, for example, *In re Gyurik*, 596 F.2d 1012, 201 USPQ 552 (CCPA 1979).

It may be that the Examiner considers the existence of a magnesium alloy in the forged/extruded pipe disclosed by Housh to inherently produce a *drawn pipe*. If such is the case, Applicants submit that the PTO's reliance upon the doctrine of inherency is misplaced. In order to rely upon the doctrine of inherency, it is incumbent upon the PTO to identify a basis in the applied prior art upon which to predicate the determinations that the allegedly inherent feature necessarily exists in the prior art and that such would have been recognized by one having ordinary skill in the art. See *Finnegan Corp. v. ITC*, 180 F.3d 1354, 51 USPQ2d 1001 (Fed. Cir. 1999). No such basis has been identified.

It would rather appear that the entire rejection is predicated upon a generalization as to the existence of a drawn pipe. Such a generalization, however, has been held to be legally insufficient to establish the requisite motivation to modify a specific reference in a specific manner to arrive at a specifically claimed invention. *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995).

Applicants, therefore, respectfully submit that the imposed rejection of claims 1, 2, 5-7, 19-21, 25, and 26 under 35 U.S.C. §103 for obviousness predicated upon Housh is completely without the requisite factual basis and motivation and, hence, is legally erroneous. Withdrawal of the imposed rejection of claims 1, 2, 5-7, 19-21, 25, and 26 under 35 U.S.C. §103 for obviousness predicated upon Housh is, therefore, respectfully solicited.

In the Response to Arguments section, the Examiner contends that Housh teaches “extruded tubing.” The Examiner contends that the AZ80A alloys of Housh have the tensile strength of 330-380 MPa.

An aspect of amended claim 1 includes a magnesium base alloy pipe characterized in that the pipe is produced by drawing a pipe blank of a magnesium base alloy. The claimed subject matter includes taking a pipe, such as, a forged or extruded pipe as a pipe blank and then drawing the pipe blank using drawing techniques. This drawing step improves the strength and ductility of the magnesium alloy pipe and is superior to extruded/forged pipes in mechanical characteristics. Accordingly, the conventional pipes of Housh could be used as ***starting materials***. However, drawing results in a change in the physical properties of a pipe because it results in an increase in the tensile strength and ductility of the pipe (*see, e.g.*, Table 1 of the originally filed specification). Indeed, the instant specification states on pg. 17, lines 1-10:

As shown in Table 1, the ***extruded pipes*** (specimens No. 1-1 and 1-7 ***representing comparative examples***) of AZ31 and AZ61 alloys,

respectively, have tensile strength of 290 MPa or below, 0.2% proof stress of 190 MPa or below, a YP ratio of 0.70 or below, and an elongation (elongation after fracture) of 6-9%. While, the ***drawn pipe*** specimens No. 1-3 through 1-6 and the specimens 1-9 through 1-12 drawn at temperatures above 50° C, embodying the ***present invention***, have tensile strength above 300 MPa, 0.2% proof stress above 250 MPa, a YP ratio above 0.90 in addition to an elongation duly above 5%. Thus, ***it will be clearly understood that the specimens prepared according to the present invention are improved in their strength without greatly reducing its toughness (emphasis added).***

Housh uses forged material and extruded material to form a bar, rod, and their shapes, not a drawing technique. It is well known by persons skilled in the art that forged and extruded materials disclose characteristics in tensile strength, elongation, and ductility, however, these are ***only*** related to the forged and extruded materials and are ***not related to the drawn pipe***. It is well known by persons skilled in the art that forged and extruded pipes are formed by forcing material over a mandrel and through a die. On the other hand, drawing is directed to passing a pipe blank through a die to form the final dimensions of a drawn pipe. Forged and extruded materials of Housh are ***considerably different*** from the claimed drawn pipe in both manufacture and physical properties.

According to the claimed subject matter per amended claim 1, the pipe has a 0.75 or greater YP ratio. The YP ratio is a ratio of 0.2% proof stress vs. tensile strength (*see, e.g.,* pg. 2, lines 3-5 of the originally filed specification). Housh is *silent* regarding the YP ratio of the AZ80 material. However, Housh describes the tensile strength and tensile yield strength at 0.2% offset. Table 7 of Housh indicates that the tensile strength of AZ80A (As-forged) is 330 and the tensile yield strength is 230. The tensile strength of Housh's Aged AZ80A (T5 temper) is 345 and the tensile yield strength is 250. Thus, the YP ratio of the As-forged material is 0.697 and the Aged (T5 temper) is .725. The YP ratio for the bar, rod, and shapes form for As-extruded is 0.735 and Aged (T5 temper) is 0.724. The AZ80 materials in Table 8 of Housh have a YP ratio of 0.614 to

0.734. Thus, the AZ80 materials of Housh have YP ratios *less than* 0.75. However, Housh does not disclose or suggest this, and apparently is unaware of the unexpected improvement in strength and increased toughness provided by the claimed pipe. Housh fails to disclose or suggest, at a minimum, “...a magnesium base alloy pipe characterized in that *the pipe is produced by drawing a pipe blank* of a magnesium base alloy, wherein the pipe contains either of the following compositions (1) or (2): (1) 0.1-12.0 mass % of Al; or (2) 1.0-10.0 mass % of Zn and 0.1-2.0 mass % of Zr; a tensile strength of the pipe is 250 MPa or above; and *the pipe has a 0.75 or greater YP ratio*,” as recited by amended claim 1.

Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge readily available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). There is no suggestion in Housh to modify the type of pipe from extruded/forged to a drawn pipe or to modify the YP ratio, nor does common sense dictate the Examiner-asserted modifications. The Examiner has not provided any evidence that there would be any obvious benefit in making the asserted modification of Housh. *See KSR Int’l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007).

The only teaching of the drawn pipe having the claimed YP ratio is found in Applicants’ disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must not be based on applicant’s disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claim 22 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Housh, in view of Becker et al. (hereinafter Becker).

The Office Action acknowledges that Housh does not disclose the feature of a cross-section shape of a pipe. The Office Action relies on Becker in an attempt to cure the admitted deficiencies of Housh. The Examiner contends that Becker discloses pipes in different shapes in the same field of endeavor or the analogous metallurgical art. In the Response to Arguments section, the Examiner asserts that Becker is cited to show that the claimed shapes of pipes are conventional. The Examiner contends that the claimed drawn pipe tensile strength has overlapped the tubing/pipe of Housh and/or Becker.

Applicants incorporate herein the arguments previously advanced in traversal of the rejection of claims 1, 2, 5-7, 19-21, 25, and 26 under 35 U.S.C. § 103(a) predicated upon Housh. Becker discusses a Mg based alloy that is *extruded* or *forged* having a composition of ZK60 with a tensile strength of 315 MPa. Becker is *silent* regarding the YP ratio. However, Becker discusses $R_{p0.2}$ corresponding to the ratio of 0.2% proof stress and R_m corresponding to the tensile strength. Thus, the YP ratio values of Becker range from 0.615 to 0.744, not 0.75 or greater. Becker fails to cure the deficiencies of Housh. Thus, even if the applied references are combined as suggested by the Examiner, and Applicants do not agree that the requisite realistic motivation has been established, the claimed subject matter will not result. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988). If any independent claim is non-obvious under 35 U.S.C. § 103(a), then any claim depending therefrom is non-obvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

As Housh and Becker do not disclose the same magnesium base alloy pipe as disclosed by the present inventors, and even if combined still fail to disclose or suggest the elements

recited by amended claim 1, the combination of Housh and Becker does not render the pipe as recited by amended claim 1 obvious.

Conclusion

In view of the above amendments and remarks, Applicants submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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